

Original Research Article

Myringo sclerosis: A Preoperative Predictor of Aditus Blockage (Study of 100 Cases)

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Abstract: Tympanosclerosis is an abnormal healing process. Aeration of mastoid air cell system is most required criteria for this success of cortical mastoidectomy with tympanoplasty especially in tubotympanic type of otitis media. Tympanoplasty has been the mainstay of treatment in chronic otitis media. Aerating mastoidectomy in cases of blocked aditus and antrum helps in reducing the recurrence. But the aditus status cannot be known preoperatively unless mastoidectomy is done. Our study aims to predict or have an idea about aditus status preoperatively by looking at tympanic membrane. Our study involved 100 cases of cortical mastoidectomy. Tabulations and calculations done for aditus patency and blockage and its association with myringo sclerosis. We found in our study that myringo sclerosis was significantly associated with blocked aditus and so presence of myringo sclerosis preoperatively indicates blocked aditus and antrum. So performing cortical mastoidectomy in such cases may help in creating aerated mastoid and further reducing chances of recurrence rate.

Keywords: Myringo sclerosis, Aditus and antrum, Tubotympanic otitis media, cortical mastoidectomy

INTRODUCTION

- Middle ear dysfunction like Eustachian obstruction is caused in tympanic membrane perforation and poor aeration due to diseased middle ear cleft and negative pressure in tympanum [1].
- Diseased middle ear mucosa shows pathological changes like hyaline degeneration and calcium deposition in tympanic membrane.
- Myringosclerosis - involving only the tympanic membrane.
- Intratympanic tympanosclerosis - involving other middle ear sites: the ossicular chain or, rarely, the mastoid cavity [2].
- Tympanosclerosis is an abnormal healing response. Factors like age, sex, size of perforation, duration of dry perforation and other degenerative changes in tympanic membrane contribute considerably to a failed tympanic membrane reconstruction [3].
- Tympanoplasty has been the mainstay of treatment in chronic otitis media [4].

- In a non cholesteatomatous Chronic otitis media, there has been much debate whether a cortical mastoidectomy is required or not [5, 6].
- Addition of mastoidectomy improves the chance of successful tympanoplasty in chronic otitis media [5, 7, 8].
- Mastoidectomy also acts as a buffer to pressure changes in the middle ear [9].

METHODOLOGY

- All tympanoplasty procedures with cortical mastoidectomy surgeries done by the primary authors in the past 3 years were analyzed retrospectively from the hospital records.
- Data was obtained regarding presence or absence of myringo sclerosis in each of these cases. Operative notes of all these cases were reviewed as to the presence or absence of a patent aditus to mastoid antrum.
- A total of 100 cases with chronic suppurative otitis media with inactive mucosal type (tubo

tympanic type) who underwent cortical mastoidectomy were included in this study. In these cases we surveyed for presence of aditus block and also whether myringo sclerosis was present in cases of aditus block.

- There was no revision cases involved in this study.
- The outcome of surgery whether graft uptake or hearing improvement was not evaluated, as this was not included in the objectives of this study.
- The data was analyzed by chisquare test and the statistical significance of p was set at 0.05.
- Odds ratio was calculated and described with a confidence interval of 95%.

OBSERVATION AND RESULTS

- This study involved 100 cases of cortical mastoidectomies performed during 2014 to 2016.
- The mean age of the patients included in the study was 25 years with the youngest being 15 years and oldest being 60 years.
- 40 of our patients were males and the remaining 60 were females.
- Of the cases selected for the study, 39 of our patients had disease in their right ears, 31 in their left ears and the remaining 30 had bilateral disease.
- Myringosclerosis was present in 19 of our patients and absent in 81 patients.
- Aditus was blocked in 59 of our patients and patent in 41 patients.

Table-1:Result

	Aditus block	Aditus patent	Total
TS present	16 (84.3%)	3 (15.7%)	19
TS absent	43 (53%)	38 (47%)	81
Total	59	41	100

The odds ratio for the aditus being non-patent in a patient having myringo sclerosis was found to be

4.7 (95% CI) and this was found to be statistically significant (P = 0.006).

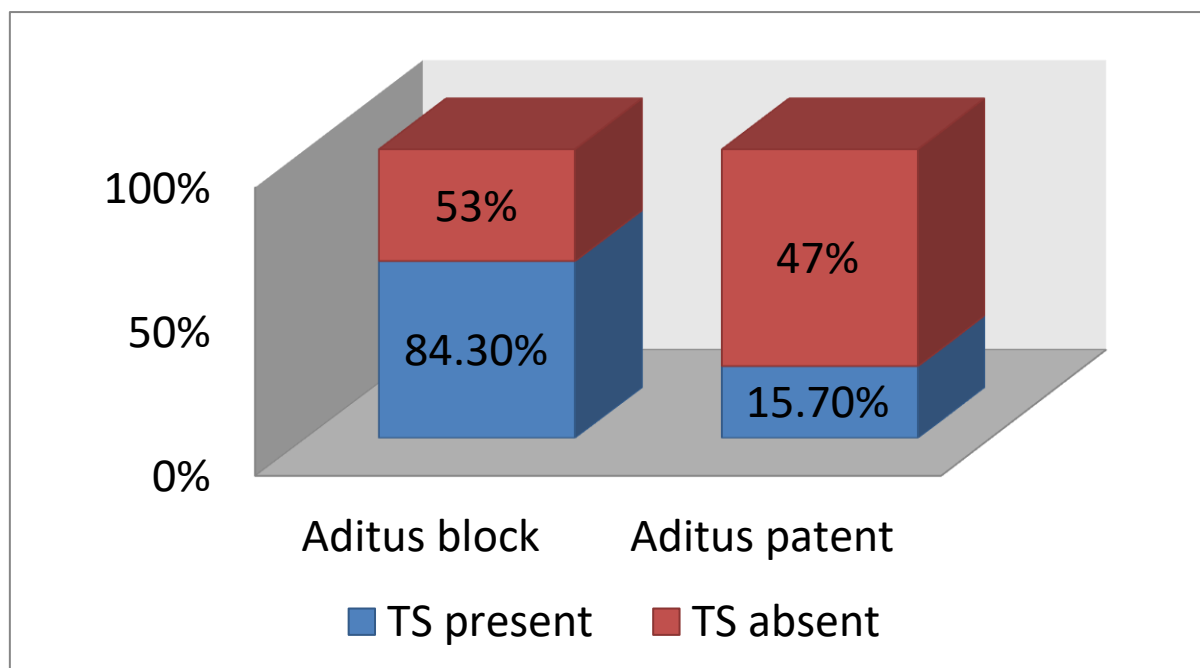


Fig-1: Relationship between tympanosclerosis and aditus blockage

DISCUSSION

- Tympanosclerosis is referring to hyaline deposits of acellular material visible as white

plaques in the tympanic membrane and as white nodular deposits in the sub mucosal layer of middle ear on otoscopy.

- Pathologically tympanosclerosis is an end result of healing process in which collagen in fibrous tissue hyalinized becomes fused in to homogenous mass [9, 10].
- Later on calcification and ossification may occur on variable extent.
- Tympanosclerosis can occur within tympanic membrane middle ear mucosa epitympanum ossicular ligaments and muscle tendons.
- Theories of pathogenesis of tympanosclerosis include immunologic hypersensitivity, increase oxygen concentration in middle ear with exposure to oxygen radicals and local inflammatory activity [11, 12].
- Myringosclerosis is usually the first of stage of disease which later involves ossicular chain and has more predilections for postero superior quadrant. Usually tympanosclerosis most commonly occurs in the region of least mucus glands and ciliary population. Attic and aditus involvement by tympanosclerosis plaques contribute to the blocking of aditus and so adding cortical mastoidectomy and clearance of tympanosclerosis plaque from aditus may help to prevent such recurrences.
- Tympanosclerosis surrounding the ossicles in epitympanum and stapes suprastructure or footplate in oval window causes varying degree of immobility of ossicular chain and is well recognized adverse factor in tympanoplasty [12].
- For Success of tympanoplasty with cortical mastoidectomy middle ear aeration is required.
- Factor leading to failure is total or partial nonoperation of middle ear and development of negative static middle ear pressure.
- In our study we found 16 cases with tympanosclerosis along with aditus blockage. Tympanosclerosis was removed and patency achieved along with ossicular reconstruction as required in some cases.
- Among 81 cases we found 43 cases with aditus blockage which was due to granulation tissue, edematous mucosa, fibrocystic or fibrocystic sclerosis which was removed to achieve patency.

CONCLUSION

- Mastoid air cell system acts as a buffer to equalize the middle ear pressure changes.
- Proper ariation of mastoid air cell system is truly required for success of tympanoplasty with cortical

mastoidectomy and this is evidenced by many previous studies.

From our study we can conclude that myringosclerosis preoperatively can be a useful guide for predicting about aditus patency and to decide to do cortical mastoidectomy. Results of our study favours relationship between myringo sclerosis and aditus blockage.

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